

SM4129: DIGITAL VISUAL EFFECTS

Effective Term

Semester A 2022/23

Part I Course Overview

Course Title

Digital Visual Effects

Subject Code

SM - School of Creative Media

Course Number

4129

Academic Unit

School of Creative Media (SM)

College/School

School of Creative Media (SM)

Course Duration

One Semester

Credit Units

3

Level

B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

SM2231 3D Animation I – Basic or SM3605 3D Contents Production in Maya or SM3701 Digital Composition or SM4123 Procedural Animation

Precursors

Nil

Equivalent Courses

Nil

Exclusive Courses

Nil

Part II Course Details

Abstract

Digital visual effects is a cross-disciplinary creative practice that requires wide-ranging background knowledge from the arts, cinematography, computer generated imagery (CGI) and programming, etc. This course aims to provide the basic understandings of both the art and science of contemporary digital visual effects. Through a series of lectures and workshops, students will gain essential background knowledge plus hands-on experience of colour management practice, image compositing, digital assets handling, open-source technologies, and integration of computer generated imagery (CGI) with live action elements. At the end of the course, students will have acquired the experience and knowledge to produce quality digital visual effects work.

Course Intended Learning Outcomes (CILOs)

CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Demonstrate understanding of the core concepts – colour management, image compositing, camera tracking, and integration of CGI elements with live action materials.		x	
2	Demonstrate problem solving skills to resolve issues in a production.		x	
3	Demonstrate capacity to evaluate the quality of a work and to offer constructive criticism.		x	
4	Conduct self-directed research to discover innovative solutions.	x	x	x
5	Produce a creative work in a collaborative effort.	x	x	x

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Teaching and Learning Activities (TLAs)

TLAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lectures	- History of digital visual effects - Introduction to leading digital effects techniques and solutions - Key concepts - Detailed deconstruction of visual effects shots - Screening of latest digital visual effects materials	1

2	Critique Sessions	Critique sessions are held regularly to encourage open discussions and constructive criticism.	1, 3	
3	Class Exercises and Assignments	<ul style="list-style-type: none"> - Introduction to industry standard post production environments; - Colour management and colour correction; - Matte creation for simple image compositing; - General 2D compositing; - Deep Image Compositing; - Rotoscoping; - Image trackers and Paint tools; - 3D camera match-moving tools; - 3D compositing; - Integration of CGI materials with shot footages. - Multi-layer/aov CGI elements - Creation and use of High Dynamic Range Images for CG Lighting 	2, 3, 4	
4	Group Project	Students take on different roles in a creative production team, to create a short video consisting of a number of visual effects shots.	1, 2, 3, 4, 5	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	In-class exercises and assignments	1, 2, 4	50	
2	Class Participation	2	10	
3	Group project and presentation	1, 2, 3, 4, 5	40	

Continuous Assessment (%)

100

Examination (%)

0

Assessment Rubrics (AR)

Assessment Task

1. Essay

Criterion

This assessment will grade on rationality, clarity and fluency of argument and comment. The threshold of ‘discovery’ lies in a student’s ability to negotiate a position that is informed, defensible, and standing on personal insight.

Excellent (A+, A, A-)

- Rich content, excellent ability to interpret and integrate various resources
- Rigorous organization, coherent structure, systematic composition
- Precision in argument, well defined and reasoned points of view grounded in insightful interpretation of existing literature
- Readiness to respond to peer opinion and other views initiated in class discussion
- Discussion shed light on new dimensions of the issue

Good (B+, B, B-)

- Adequate content, sufficient ability to integrate various resources based on demand
- Reasonable organization with balanced structure and composition
- Clear elaboration of ideas that sticks to the point, with clearly differentiated issues, ability to interpret opinions independently
- Sufficient responses to peer comments to sustain a discussion

Fair (C+, C, C-)

- Adequate content, fair ability to integrate various resources based on demand
- Fair organization with adequate structure and composition
- Relevant points made to the subject matter in question
- Ability to respond to other statements and engage in class discussion

Marginal (D)

- Weak content, limited use of resources
- Poor organization, structure and composition
- Relevant points to the subject matter, marginal ability to interpret opinions
- Ability to respond to other comments in simple terms

Failure (F)

- Inadequate content, no/ irrelevant use of resources
- No organization, structure or/and composition
- Irrelevant points to the subject matter, no ability to interpret opinions
- Fail to respond to other comments

Assessment Task

2. Digital Visual Effect Project

Criterion

Students should demonstrate ability to utilize primary and secondary sources, execute creative ideas and projects. The threshold of ‘discovery’ lies in a student’s proactively turning theory into praxis, to transform course material into self-owned authorship.

Excellent (A+, A, A-)

- Work has strong affective quality and the articulation of personal styles and signature
- Excellent appreciation, exploration and/or application of the aesthetic and expressive qualities of the medium
- Work raises questions and instill insights about the process of conception, creative strategization and production
- Innovative exploration by combining knowledge from different disciplines (e.g. mathematics, psychology, physics, anthropology, etc.) to create an inter-disciplinary project

- Efficient adjustment of plans and strategies in response to resources (time, space, equipment, etc) available with constructive adjustment

Good (B+, B, B-)

- Strong appreciation, exploration and/or application of the aesthetic and expressive qualities of the medium
- Ability to create project/ work that demonstrate the processes of thinking and creative exploration
- Proper adjustment of plans and strategies in response to resources (time, space, equipment, etc) available and constructive feedback/ suggestions

Fair (C+, C, C-)

- Basic appreciation and/or application of the aesthetic and expressive qualities of the medium
- Limited ability to create project/ work that demonstrate the processes of thinking and creative exploration
- Adjustment of plans and strategies in response to resources (time, space, equipment, etc) available

Marginal (D)

- Marginal appreciation of the aesthetic and expressive qualities of the medium
- Marginal ability to create project/ work that demonstrate the processes of thinking and creative exploration
- Limited adjustment of plans and strategies in response to resources (time, space, equipment, etc) available

Failure (F)

- No appreciation of the aesthetics and expressive qualities of the medium
- Fail to create project/ work that demonstrate the processes of thinking and creative exploration
- Minimal adjustment of plans and strategies in response to resources (time, space, equipment, etc) available

Assessment Task

3. Presentation

Criterion

This assessment will grade on content and fluency of presentation. Students should show their co-operation to conduct a well-organized presentation with their own argument and evidence from readings and notes. The threshold of ‘discovery’ lied in a student’s self initiatives to conduct additional research and to personalize theories for her/his personal daily experience.

Excellent (A+, A, A-)

- Rich, informative content, excellent grasp of the material with in-depth and extensive knowledge of the subject matter
- Rigorous organization, coherent structure, and systematic exposition with a strong sense of narrative
- Superior presentation skills: distinct pronunciation, fluent expression and appropriate diction, exact time-management
- Critical analysis with insightful comments opening up new issues, or suggesting the ability to theorize

Good (B+, B, B-)

- Adequate content with firm grasp of the material that informs the audience on a subject matter
- Reasonable organization, balanced structure and composition
- Good verbal communication: comprehensible pronunciation, fluent expression and diction, fair time-management

Fair (C+, C, C-)

- Adequate content with comprehensive grasp of the material demonstrating basic knowledge of the subject matter
- Fair organization, weak structure and composition
- Fair presentation skills: acceptable pronunciation, expression and diction, fair time-management

Marginal (D)

- Weak content, loose grasp of the general ideas with some knowledge of the subject matter
- Poor organization, structure and composition
- Poor presentation skills: marginal pronunciation, expression and diction, poor time-management

Failure (F)

- Inadequate content, fail to identify the general ideas with knowledge of the subject matter
- No organization, structure or/and composition
- Poor presentation skills: marginal pronunciation, expression and diction, minimal time-management

Additional Information for AR

All A+/A/A- grade assignment should comply with the highest performance of Discovery-oriented learning.

Part III Other Information**Keyword Syllabus**

Post-production, film negative formats, video formats, twinning effects, motion control camera, miniature, colour correction, retiming, 2D compositing, blue screen, green screen, colour keying, luma keying, difference keying, matte creation, rotoscoping, wire removal, restoration, vector painting tool, image tracking, camera tracking, 3D compositing, match-moving, 2D particle system, Computer Generated Imagery, Deep Image, OpenEXR, ACES Colour Management, Alembic digital asset, Photogrammetry

Reading List**Compulsory Readings**

	Title
1	The Art and Science of Digital Compositing, Second Edition: Techniques for Visual Effects, Animation and Motion Graphics (The Morgan Kaufmann Series in Computer Graphics) - Ron Brinkmann
2	The VES Handbook of Visual Effects Society: Industry Standard VFX Practices and Procedures (Second Edition)
3	Official online training materials for Nuke https://www.foundry.com/products/nuke/tutorials

Additional Readings

	Title
1	Special Effects: The History and Technique - Richard Rickitt, Ray Harryhausen
2	Compositing Visual Effects: Essentials for the Aspiring Artist - Steve Wright
3	Industry-wide VFX reference platform https://vfxplatform.com/